

IN THE CLAIMS:

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (previously presented) A storage system comprising:
a first storage unit for storing data from a first server;
a second storage unit for storing the data stored in said first storage unit;
a storage controller being coupled with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit,
wherein when an instruction for splitting between said first and second storage units is received from said first server, said storage controller reports an end of the splitting to said first server before completing of copying from said first storage unit to said second storage unit, receives an instruction for backup from said second server during the copying from said first storage unit to said second storage unit, and then transfers data to a backup device from said second storage unit after copy of data from said first storage unit to said second storage unit ends based on controlling by said storage controller,
wherein if an instruction for backup is issued from said second server after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed-up, and
wherein if differential data in said first storage unit remains to be backed-up, then said storage controller reflects the differential data in said

second storage unit and transfers backed-up data from said second storage unit to said backup device.

2. (previously presented) A storage system as set forth in claim 1, wherein data is transferred from said second storage unit to said backup device after copy of all data from said first storage unit to said second storage unit ends.

3. (previously presented) A storage system comprising:
a first storage unit for storing information from a first server;
a second storage unit for storing the information stored in said first storage unit; and

a storage controller being coupled with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit,

wherein when an instruction for splitting is received from said first server, said storage controller reports an end of the splitting to said first server, receives an instruction for backup from said second server, and then transfers information to a backup device from said second storage unit after copy of information from said first storage unit to said second storage unit ends, and

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said second information is stored from said first storage unit into said second storage unit

and then said first information and said second information are transferred from said second storage unit to said backup device.

4. (previously presented) A storage system comprising:
 - a first storage unit for storing information from a first server;
 - a second storage unit for storing the information stored in said first storage unit; and
 - a storage controller being coupled with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit,
 - wherein when an instruction for splitting is received from said first server, said storage controller reports an end of the splitting to said first server, receives an instruction for backup from said second server, and then transfers information to a backup device from said second storage unit after copy of information from said first storage unit to said second storage unit ends, and
 - wherein when said storage controller receives a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is stored from said second storage unit into a memory that is connected with said storage controller and acts to store information and said second information is stored from said first storage unit into said memory, and then said first information and said second information stored in said memory are transferred to said backup device.

5. (previously presented) A backup method for a storage system having a first storage unit for storing data from a first server, a second storage unit for storing the data stored in said first storage unit, and a storage controller being connected with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit, wherein said method comprising the steps of:

causing said first server to issue an instruction for splitting between said first and second storage units to said storage controller;

then causing said storage controller to report an end of the splitting to said first server before completing of copying from said first storage unit to said second storage unit; and

then, when an instruction for backup is received from said second server during the copying from said first storage unit to said second storage unit, transferring data from said second storage unit to a backup device after the end of copy of the data from said first storage unit to said second storage unit based on controlling by said storage controller,

wherein if an instruction for backup is issued from said second server after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed up, and

wherein if differential data in said first storage unit remains to be backed up, then said storage controller reflects the differential data in said second storage unit and transfers backed up data from said second storage unit to said back-up device.

6. (previously presented) A backup method as set forth in claim 5, wherein when there is a request from said second server for transfer of data stored in said second storage unit to the backup device, the data is transferred to said backup device from said second storage unit after end of copy of the whole data into said second storage unit from said first storage unit.

7. (previously presented) A backup method for a storage system having a first storage unit for storing information from a first server, a second storage unit for storing the information stored in said first storage unit, and a storage controller being connected with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit, wherein said method comprising the steps of:

causing said first server to issue an instruction for splitting to said storage controller;

then causing said storage controller to report end of the splitting to said first server; and

then, when an instruction for backup is received from said second server, transferring information from said second storage unit to a backup device after end of copy of the information from said first storage unit to said second storage unit,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said second

information is stored from said first storage unit into said second storage unit, and said first information and said second information are transferred from said second storage unit to said backup device.

8. (previously presented) A backup method for a storage system having a first storage unit for storing information from a first server, a second storage unit for storing the information stored in said first storage unit, and a storage controller being connected with said first storage unit, said second storage unit, said first server, and a second server, and being used to control said first storage unit and said second storage unit, wherein said method comprising the steps of:

causing said first server to issue an instruction for splitting to said storage controller;

then causing said storage controller to report end of the splitting to said first server; and

then, when an instruction for backup is received from said second server, transferring information from said second storage unit to a backup device after end of copy of the information from said first storage unit to said second storage unit,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is copied from said second storage unit into a memory that is connected with said storage controller and acts to store information and said second information is copied from said first storage unit into said memory, and

said first information and said second information stored in said memory are transferred to said backup device.

9. (previously presented) A backup system comprising:
- servers for storing data;
 - a first storage unit for storing data from said servers;
 - a second storage unit for copying the data stored in said first storage unit; and
 - a storage controller connected with said servers, said first storage unit, and said second storage unit and controlling said first and second storage units;
- wherein when said storage controller receives an instruction for splitting between said first and second storage units from said servers, an end of splitting is reported to said servers before completing of copying from said first storage unit to said second storage unit, an instruction for backup is received from said servers during the copying from said first storage unit to said second storage unit, then data is copied from said first storage unit into said second storage unit, and after the end thereof the data is transferred from said second storage unit to the backup device based on controlling by said storage controller,
- wherein if an instruction for backup is issued from said servers after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed up, and
- wherein if differential data in said first storage unit remains to be backed up, then said storage controller reflects the differential data in said

second storage unit and transfers backed up data from said second storage unit to said back-up device.

10. (original) A backup system as set forth in claim 9, wherein said servers have a first server for issuing the instruction for splitting and a second server for issuing the instruction for backup.

11. (previously presented) A backup system as set forth in claim 9, wherein information is transferred from said second storage unit to said backup device after copy of whole data from said first storage unit to said second storage unit ends.

12. (previously presented) A backup system comprising:
servers for storing information;
a first storage unit for storing information from said servers;
a second storage unit for copying the information stored in said first storage unit; and
a storage controller connected with said servers, said first storage unit, and said second storage unit and controlling said first and second storage units,

wherein when said storage controller receives an instruction for splitting from said servers, end of splitting is reported to said servers, an instruction for backup is received from said servers, then information is copied from said first storage unit into said second storage unit, and after the end

thereof the information is transferred from said second storage unit to the backup device, and

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said second information is copied from said first storage unit into said second storage unit and then said first information and said second information are transferred from said second storage unit to said backup device.

13. (previously presented) A backup system comprising:
servers for storing information;
a first storage unit for storing information from said servers;
a second storage unit for copying the information stored in said first storage unit; and
a storage controller connected with said servers, said first storage unit, and said second storage unit and controlling said first and second storage units,

wherein when said storage controller receives an instruction for splitting from said servers, end of splitting is reported to said servers, an instruction for backup is received from said servers, then information is copied from said first storage unit into said second storage unit, and after the end thereof the information is transferred from said second storage unit to the backup device, and

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first

storage unit into said second storage unit to the backup device, said first information is stored from said second storage unit into a memory that is connected with said storage controller and acts to store information and said second information is stored from said first storage unit, and then said first information and said second information stored in said memory are transferred to said backup device.

14. (previously presented) A storage system comprising:

a plurality of storage units; and

a storage controller for controlling said storage units,

wherein said storage units include first and second storage units, and

wherein said storage controller comprises:

(a) a memory,

(b) a first control portion connected with said memory, accepting splitting processing between said first and second storage units sent from a first server, and reporting an end of the splitting to said first server before completing of copying from said first storage unit to said second storage unit,

(c) a second control portion connected with said memory and accepting backup processing sent from a second server after said report of the end of the splitting during the copying from said first storage unit to said second storage unit,

(d) a third control portion connected with said storage units and said memory, and acting to copy data from said first storage unit to said second storage unit, and

(e) a fourth control portion connected with said memory and transferring data from said second storage unit to a backup device after the end of copy of data from said first storage unit to said second storage unit based on controlling by said storage controller,

wherein if an instruction for backup is issued from said second server after the splitting, then said storage controller checks whether differential data in said first storage unit remains to be backed up, and

wherein if differential data in said first storage unit remains to be backed up, then said storage controller reflects the differential data in said second storage unit and transfers backed up data from said second storage unit to said back-up device.

15. (previously presented) A storage system as set forth in claim 14, wherein data is transferred from said second storage unit to said backup device after end of copy of whole data from said first storage unit to said second storage unit.

16. (previously presented) A storage system comprising:
a plurality of storage units; and
a storage controller for controlling said storage units,
wherein said storage units include first and second storage units, and
wherein said storage controller comprises:
(a) a memory,

(b) a first control portion connected with said memory, accepting splitting processing sent from a first server, and reporting end of splitting to said first server,

(c) a second control portion connected with said memory and accepting backup processing sent from a second server after said report of end of the splitting,

(d) a third control portion connected with said storage units and said memory, and acting to copy information from said first storage unit to said second storage unit, and

(e) a fourth control portion connected with said memory and transferring information from said second storage unit to a backup device after end of copy of information from said first storage unit to said second storage unit,

wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into the second storage unit to the backup device, said second information is stored from said first storage unit into said second storage unit, and then said first information and said second information are transferred from said second storage unit to said backup device.

17. (currently amended)A storage system comprising:

a plurality of storage units; and

a storage controller for controlling said storage units,

wherein said storage units include first and second storage units, and

wherein said storage controller comprises:

- (a) a first memory,
 - (b) a first control portion connected with said first memory, accepting splitting processing sent from a first server, and reporting end of splitting to said first server,
 - (c) a second control portion connected with said memory and accepting backup processing sent from a second server after said report of end of the splitting,
 - (d) a third control portion connected with said storage units and said memory, and acting to copy information from said first storage unit to said second storage unit, and
 - (e) a fourth control portion connected with said memory and transferring information from said second storage unit to a backup device after end of copy of information from said first storage unit to said second storage unit,
- wherein when there is a request for transfer of first information stored in said second storage unit and second information not stored from said first storage unit into said second storage unit to the backup device, said first information is stored from said second storage unit into a second memory connected with said storage controller and acting to store information temporarily and said second information is stored from said first storage unit into said second memory, and
- wherein said first information and said second information stored in said second memory are transferred to said backup device.